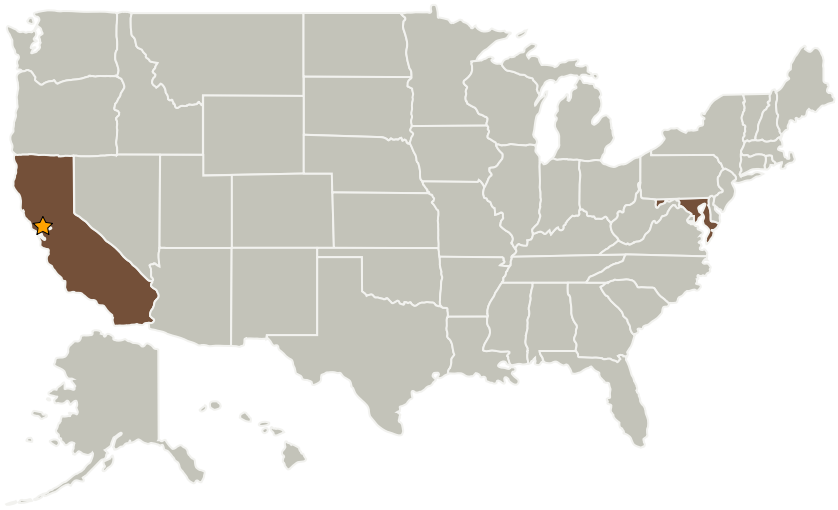
Agent-based Health Monitoring System, Phase I

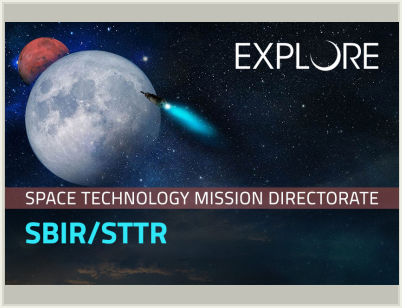
Completed Technology Project (2004 - 2004)

Project Introduction

IAI has successfully used principal component analysis to detect even subtle latent faults in a subsystem. An advantage of the PCA for this application is that the system can be real-time, even when there are very large data sets to be analyzed. IAI has also successfully used software autonomous agents to provide robust, flexible, optimized control of large complex decentralized systems such as air traffic control, battle management, etc. The innovation of this proposal is the integration of these previously separate technologies to provide system health management and self-reliant systems. The system to which we will apply this innovation is a power grid where nodes can be power producers, power consumers, power transmission elements, and in some cases nodes can be either producers or consumers at different times. Our software agents interact with each other based on a contract net paradigm. IAI has been working on agent-based systems for a decade and has an extensive library of tools and techniques to design and implement agents interacting via a contract net. These tools and techniques will be used in the proposed work and will allow us to implement a simulation of a non-trivial system even during Phase 1.

Primary U.S. Work Locations and Key Partners





Agent-based Health Monitoring System, Phase I

Table of Contents

Project Introduction 1
Primary U.S. Work Locations and Key Partners 1
Organizational Responsibility 1
Project Management 2
Technology Areas 2

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Small Business Innovation Research/Small Business Tech Transfer

Agent-based Health Monitoring System, Phase I

Completed Technology Project (2004 - 2004)

Organizations Performing Work	Role	Type	Location
★Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Intelligent Automation, Inc.	Supporting Organization	Industry	Rockville, Maryland

Primary U.S. Work Locations	
California	Maryland

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Leonard Haynes

Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
  - TX03.3 Power Management and Distribution
    - TX03.3.1 Management and Control